

REMARKS

The Official Action rejects Claim 7 under 35 U.S.C. §102(b) as being anticipated by Japanese Patent Application Publication No. 10-253845 to Akira Tomaru, et al. As described below, Claim 7 has been amended to further patentably distinguish the claimed invention from the Tomaru '845 publication. Support for this amendment is provided, for example, by Example 13 on page 34, line 17 – page 35, line 10 of the present application. In light of the foregoing amendment and the following remarks, reconsideration of the present application and allowance of amended Claim 7 are respectfully requested.

The Tomaru '845 publication describes a method of forming a multi-mode waveguide having a core with a thickness of about 50 micrometers or more. In this regard, the Tomaru '845 publication describes a fabrication method in which the core of a multi-mode waveguide is formed by filling a liquid receiver 11 defined by a platform 12 with a solution of oligomer 20. See, for example, Figure 1 of the Tomaru '845 publication.

In contrast, a method of forming a polymer optical waveguide pattern is defined by amended Claim 7 to include the step of “forming a core layer of a photosensitive composition by a spin-coating method with a thickness which satisfies a single-mode condition of a resulting optical waveguide that comprises the core layer”. After drying the photosensitive composition, the photosensitive composition thin film is irradiated with light through a mask and a core-ridge pattern is then directly formed by wet etching the photosensitive composition thin film.

As now set forth by amended independent Claim 7, a core layer is formed of the photosensitive composition with a thickness which satisfies the single-mode condition for the resulting optical waveguide. As such, a single-mode waveguide may be constructed by the method of amended independent Claim 7. As known to those skilled in the art, the core of a single-mode waveguide is generally much smaller than the core of a multi-mode waveguide with the core of the single-mode waveguide of one embodiment described by the present application to have a thickness of about eight micrometers.

Additionally, amended independent Claim 7 recites that the core layer is formed by a spin-coating method. By utilizing the spin-coating method, the method of the claimed invention is superior to conventional techniques since the birefringence of a photocured liquid oligomer

that has been spin-coated can be reduced to less than 1×10^{-3} . See, for example, page 15, lines 2-5 of the present application. In addition, formation of the core layer with a spin-coating method also permits the resulting optical waveguide to advantageously have an optical propagation loss of 1.0 db or less at a wavelength of 1.3 micrometers. See, for example, Example 13 described on page 34, line 17 – page 35, line 10 of the present application.

In contrast to the method of amended independent Claim 7, the Tomaru '845 publication discloses the formation of a multi-mode waveguide and not a single-mode waveguide. In this regard, the formation of a multi-mode waveguide as described by the Tomaru '845 publication is substantially different than the formation of a single-mode waveguide with the core thickness of the multi-mode waveguide being about 50 micrometers or more in comparison to a thickness of about 8 micrometers for the core layer of one embodiment of the claimed invention.

Additionally, the Tomaru '845 publication fails to teach or suggest forming the core layer utilizing a spin-coating method as now set forth by amended independent Claim 7. Instead, the Tomaru '845 publication discloses the formation of the core by filling a liquid receiver with a solution of oligomer. As will be noted, this technique for forming the core of the multi-mode waveguide of the Tomaru '845 publication may be suitable for forming relative thick core layers, such as having thicknesses of about 50 micrometers or more, but is not taught or suggested to be suitable for forming thinner core layers, such as those utilized by single-mode waveguides. In addition to simply permitting a smaller core layer to be formed, the spin-coating method can produce a core layer that is flatter than that produced by the technique described by the Tomaru '845 publication and can, accordingly, produce an optical wave guide with a core layer having more uniform thickness than that produced by the technique described by the Tomaru '845 publication. By forming a core layer that is relatively flat and has a relatively uniform thickness, an optical waveguide including the core layer formed in accordance with a spin-coated method as set forth by amended independent Claim 7 can advantageously have a relatively low loss, such as noted above with an exemplary optical propagation loss of 1.0 db or less at wavelengths of 1.3 micrometers. In any event, the Tomaru '845 publication does not teach or suggest the formation of a core layer with a spin-coating method as now set forth by amended independent Claim 7.

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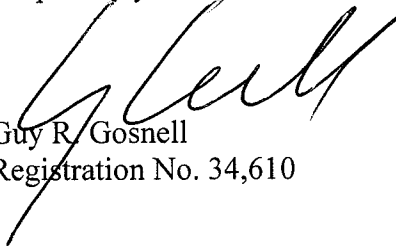
For each of the foregoing reasons, the method of amended independent Claim 7 is not taught or suggested by the Tomaru '845 publication. As such, the rejection of Claim 7 is therefore overcome.

CONCLUSION

In view of the amendments to Claim 7 and the foregoing remarks, it is respectfully submitted that Claim 7 is in condition for immediate allowance. It is therefore respectfully requested that a Notice of Allowance be issued. The Examiner is encouraged to contact Applicants' undersigned attorney to resolve any remaining issues in order to expedite examination of the present application.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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